



STRATEGIC HIGHWAY SAFETY PLAN

2010 Revision

As required by title 23 U.S.C. § 148, the Indiana Strategic Highway Safety Plan identifies critical highway safety problems and opportunities for saving lives, reducing suffering and economic losses resulting from traffic crashes. It also serves to coordinate the traffic safety activities of state agencies, municipal entities and private highway safety organizations.

Indiana Department of Transportation

10/1/2010

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1 FORWARD



Mitchell E. Daniels, Jr., Governor

"The increasing demands upon our highways from a growing population, the development of new uses, the imposition of modes of transportation not contemplated when they were created, have brought about congestion, confusion, and conflict, until the yearly toll of traffic accidents has reached an appalling total. If the death and disaster that now fall upon innocent people, through the years and over our country as a whole, were concentrated into one calamity we would shudder at the tremendous catastrophe. The loss is no less disastrous because diffused in time and space."

President Calvin Coolidge spoke those words in 1924 at the first National Conference on Street and Highway Safety, yet sadly, they still ring true today. We have learned a great deal about roadway safety since the early days of the automobile, invested many billions of dollars to produce safer vehicles and construct better, more crash forgiving roads, yet there is still death, suffering and economic loss resulting from traffic crashes every day.

The first Strategic Highway Safety Plan (SHSP) adopted by Indiana in 2006 began a process of continuous improvement in how our state addresses traffic crashes. This update of our first effort reflects lessons learned in the process. The quality of crash data and our ability to analyze what it reveals has improved, providing a better picture of where and how to focus our traffic safety efforts to achieve maximum effect.

As we improve the SHSP, we must always remind ourselves that safety is not a priority, but a core value that influences and drives our priorities. Priorities will change depending on demands of the moment or economic limitations. Core values remain constant.

Safety is one of the three core values at the heart of planning, designing, building and operating a transportation system. Mobility is the second core value ensuring the system carries traffic reliably and efficiently. Access is the third core value ensuring traffic may enter and leave the system where necessary. When safety, mobility, and access are in balance, roadway systems perform at their best.

Indiana traffic safety professionals work every day to save lives, reduce suffering and minimize economic loss and I urge all Hoosiers driving, biking or walking to join in that effort by exercising care and consideration for everyone on the road.

M E Daniels, Jr.

October 1, 2010

2 PURPOSE

The purpose of Indiana's SHSP is to serve as a tool to aid in the effort to comprehensively identify, analyze, and prioritize countermeasures for addressing the greatest threats to highway safety. It is a living document used by engineering, law enforcement, public education, and emergency medical responder leadership in allocating resources to prevent or reduce the frequency and severity of traffic crashes as well as to improve the medical outcomes of those injured. It encourages government agencies and safety advocates to work across jurisdictional boundaries to address crash problems regardless of where they occur.

The Strategic Highway Safety Plan (SHSP) is not a standard, policy, or legal document that makes or mandates traffic safety decisions. The SHSP informs decision-makers by providing data related to the safety of the highway system as measured by crash occurrence and outcome. Decision makers can then consider safety issues explicitly along with all other factors that influence highway system decision-making.

Shared duty and partnerships are important elements in reducing human suffering and economic loss from traffic crashes in Indiana. Better communication, coordination, and cooperation between state, regional and local agencies as well as with safety advocates and organizations, are vital to successful implementation and deployment of highway safety improvement strategies.

2.1 Mission

Ensure safe travel for all users of Indiana's streets, roads, and highways.

2.2 Vision

Reduce human suffering and economic loss from traffic crashes.

2.3 Goal

Eliminate traffic crash deaths and incapacitating injuries.

2.4 Benchmarks

To allow for evaluation of progress toward this plan's goal, intermediate benchmarks establish target performance levels along the way.

There are three dilemmas facing traffic safety practitioners when selecting performance measures. First, what measure (or measures) will provide an accurate evaluation that everyone can understand and apply? Second, what level of performance can be considered acceptable progress? Third, how to account for changes in the numbers of people traveling.

For many years, traffic safety practitioners addressed these dilemmas by measuring highway safety as a fatality rate. Essentially the ratio of deaths to the population, the number of licensed drivers, or the amount of vehicle miles traveled. These measures have useful purposes, but they also have their drawbacks, particularly outside of technical environments.

The goal of the first Indiana SHSP was reducing traffic crash fatalities to .98 per 100 Million Vehicle Miles of Travel (HMVMT) in 2008 and .92 HMVMT in 2010. This exposure rate measure accounts for changing traffic demand on the roads. It is dependent on an estimated value – vehicle miles of travel – that is highly technical and not easily understood by the average person.

This SHSP will use two benchmarks, each with short term and long term targets.

2.4.1 Highway Deaths

Short term; maintain annual fatalities below the average of the preceding five years, while long term reducing traffic deaths at an average rate of 20 per year

In 2007, the American Association of State Highway Transportation Officials (AASHTO) abandoned its previous stated national goal expressed in terms of fatality rate and established a new national goal of reducing by 50% the number of fatalities over the next 20 years by seeking an annual reduction of one thousand deaths each year. Since traffic deaths in Indiana peaked in 1969, the state's portion of the national highway death toll has dropped from three percent to roughly two percent at a rate of roughly 20 fewer deaths annually. Achieving Indiana's portion of the current national goal by 2027 would require the same rate of 20 fewer deaths annually.

Reaching a highway safety goal relies upon its public acceptance and its support from decision makers. It will be difficult to gain that vital acceptance and support if the average person does not easily understand it. In its resolution (PR-07-01) AASHTO stated . . . "statement of a safety goal in terms of actual number of lives saved will resonate with the public and these institutions significantly more than the abstract notion of an exposure rate measure."

This measure is particularly well suited to measuring individual strategies that address issues of driver behavior. It allows for easy integration of problem identification, countermeasures and performance measures identified in the Highway Safety Plan (Per 23 U.S.C. § 402) into the SHSP.

Figure 1 Five Year Average Traffic Fatality Performance

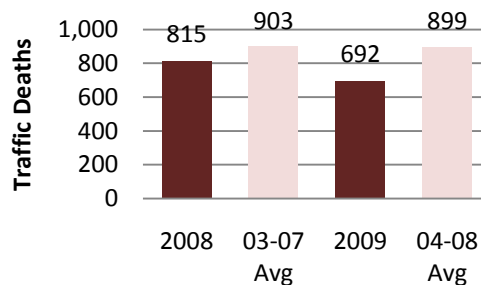
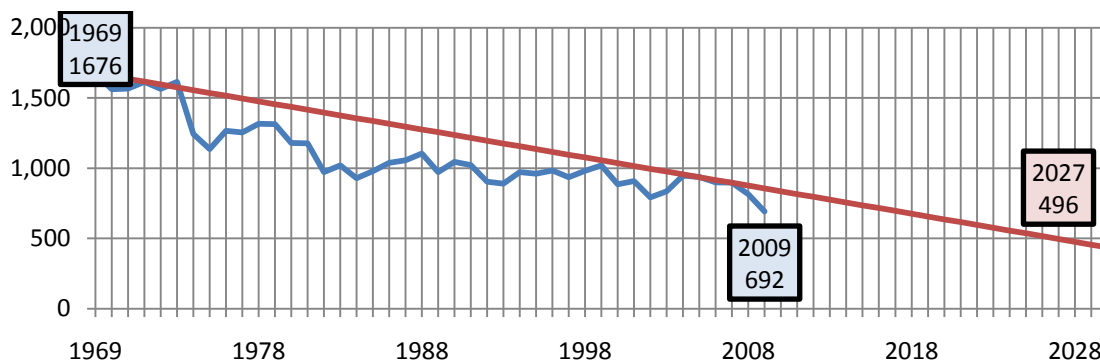


Figure 2 20 Fatalities Fewer Per Year Trend



2.4.2 Severe Crashes

Short term; maintain annual severe crashes below the average of the preceding five years, while long term reducing severe crashes at an average rate of 97 per year

Under 23 CFR Part 924, states are directed that evaluation of the SHSP should include a process for determining the effect that highway safety improvement projects have in reducing the number of fatalities and serious injuries. Fatality producing crashes account for less than one half percent of all reported traffic crashes in Indiana. Highway deaths alone provide an incomplete and distorted picture of actual highway safety performance. Just as there are multiple contributors to the cause of a crash, there are multiple contributors to the ultimate medical outcome for those people involved. The actual difference in outcome between two crashes of similar severity is often reduced to whether or not occupant protection devices are used, the age or health of the occupants or the safety integrity of the vehicle. Another weakness of using total fatalities as the sole safety performance measure is that it diminishes the significance of crashes simply because the outcome did not result in a death and over represents crashes that result in multiple deaths.

INDOT monitors severe crashes, or those crashes that result in either a death or an injury requiring a person to be taken from the scene for hospital treatment (incapacitation). These crashes account for roughly one and a half percent of all Indiana crashes. In 2007, there were 3,872 severe crashes.

To match the tact taken with regard to traffic fatalities, a benchmark of reducing severe crashes at a rate of -97 annually would cut in half the number of severe crashes recorded in 2007 over twenty years. This measure is well suited to measuring the performance of engineering countermeasures employed to reduce both crash numbers and the severity of crash outcomes.

Figure 3 Five Year Average Severe Crash Performance

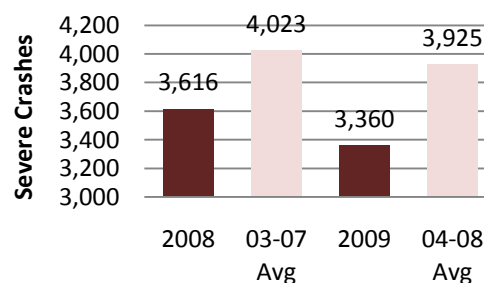
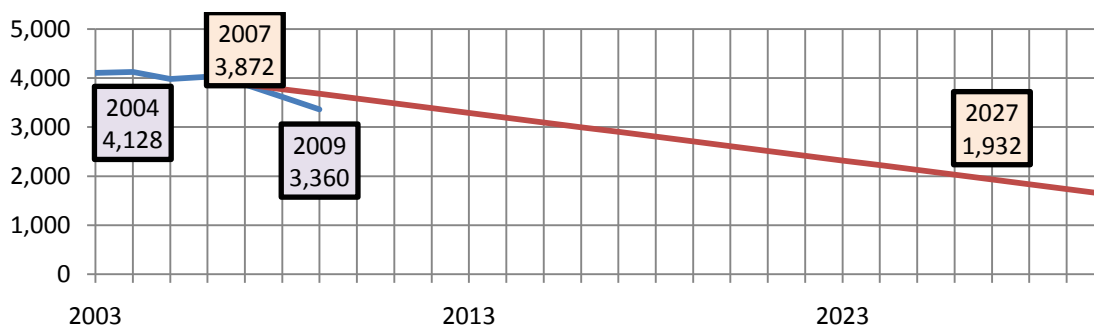


Figure 4 Annual 97 Fewer Severe Crashes Trend



3 PARTNERS

3.1.1 Managing State Agencies

These agencies administer state and federal funds directed to highway traffic safety improvement.

- **The Indiana Criminal Justice Institute (ICJI)** [Driver Education and Enforcement Program Administration] serves as the state's planning agency for criminal justice, juvenile justice, traffic safety, and victim services. It is the host agency for the Governor's Council on Impaired and Dangerous Driving, which is charged with developing policies, procedures, strategies, and programs to effectively manage and administer Indiana's highway safety program under 23 U.S.C. § 402. ICJI has oversight responsibility for private driver education schools.
- **The Indiana Department of Transportation (INDOT)** [Roadway Infrastructure Program Administration] is responsible for planning, designing, constructing, and maintaining state roads, interstates, and U.S. routes. It is the agency responsible for state implementation of the Highway Safety Improvement Program, and is required under the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) to produce and maintain the SHSP. INDOT is required to report annually to the Secretary of Transportation on progress being made to implement highway safety improvement projects under 23 U.S.C. § 148.
- **The Indiana State Police (ISP)** [Enforcement, Crash Reporting Administration, CMV Program Administration] is Indiana's primary statewide law enforcement agency. Its duties include working with communities to improve public safety, enforcing drug laws, investigating crimes, enforcing traffic laws and the laws and regulations pertaining to commercial motor vehicles as administrators of the Indiana Commercial Vehicle Safety Plan required by 49 CFR 350.

3.1.2 Contributing State Agencies

These agencies have a role in implementing highway safety strategies and countermeasures.

- **The Indiana Department of Homeland Security (IDHS)** [Emergency Medical Program Administration] embodies four divisions, the division of planning and assessment, the division of preparedness and training, the division of emergency response and recovery and the division of fire and building safety. These divisions intertwine to accomplish the central mission of IDHS: safeguarding the lives and property of the citizens of Indiana.
- **The Indiana Department of Health (DOH)** [Trauma System Program Administration] is the lead agency for the development, implementation and oversight of a state-wide comprehensive trauma care system to save lives and improve the care and outcome of individuals injured in Indiana. IDH is empowered to adopt rules concerning the development and implementation of a state trauma registry and standards and procedures for trauma care level designation of hospitals.
- **The Indiana Department of Education (DOE)** [Driver/Motorcycle Education] has oversight responsibility under Indiana law to administer motorcycle operator education and oversight of driver education in public schools.
- **The Indiana Bureau of Motor Vehicles (BMV)** [Driver and Vehicle Licensing] is charged with the licensing of drivers, the registration and titling of vehicles, the collection of taxes, and the management of records related to these functions.

- **The Indiana Department of Revenue (DOR)** [CMV Program Operations] Motor Carrier Services Division oversees Indiana's "one stop shop" for commercial motor vehicle services. This includes international registration, over-size and weight permitting, fuel tax stamps, and other commercial vehicle programs.
- **The Indiana Law Enforcement Training Board (LETB)** [Law Enforcement Education] has oversight over all law enforcement training curriculum and directly administers the primary basic law enforcement academy for the state and certifies the training provided at six agency specific or regionally operated academies.
- **Indiana Supreme Court - Judicial Technology and Automation Committee (JTAC)** [Judicial Systems] JTAC is creating a system in which allows law enforcement officers to enter traffic violations directly into a statewide electronic data repository to speed citation issuance, processing, adjudication and analysis.
- **Indiana Alcohol and Tobacco Commission - Indiana State Excise Police (ISEP)** [Alcohol Law Enforcement] ISEP is the law enforcement division of the Alcohol & Tobacco Commission. State Excise police officers are empowered to enforce all laws of the State of Indiana, as well as the laws and rules of the Alcohol & Tobacco Commission.
- **State Department of Toxicology - Indiana University School of Medicine** [Breath Test Certification – Drug Testing] The Department screens, trains and certifies breath test operators and equipment as well as supports coroners in testing for poisons, drugs and alcohol for use in criminal prosecutions.

3.1.3 Guiding Federal Agencies

These federal agencies provide guidance, oversight and technical support for highway safety activities.

- **The Federal Highway Administration (FHWA)** [Highway Program Oversight] carries out the Federal highway programs in partnership with the State and local agencies to meet the Nation's transportation needs. FHWA administers these programs to ensure that Federal funds are used efficiently and promote the use of the best available safety practices, programs, and technologies in all phases of highway planning, design, construction, and operation.
- **The Federal Motor Carrier Safety Administration (FMCSA)** [CMV Program Oversight] has the primary mission of reducing crashes, injuries, and fatalities involving large trucks and buses.
- **The National Highway Traffic Safety Administration (NHTSA)** [Driver Behavior Program Oversight] is tasked with enhancing traffic safety through education, research, establishing safety standards, and promoting enforcement activity.
- **The Federal Railroad Administration (FRA)** [Highway-Rail Crossing Oversight] issues and enforces rail safety regulations, administers railroad assistance programs, conducts research and development in support of improved railroad safety and national rail transportation policy, and consolidates government support of rail transportation activities.

3.1.4 Stakeholder, Advisory and Contributing Organizations

These state organizations and associations are representative of those that contribute to the SHSP's development and implementation or upon which the strategies and countermeasures of the SHSP may have an effect.

- American Automobile Association (AAA)
- American Traffic Safety Services Association (ATSSA)

- Indiana ABATE
- Indiana Association of Chiefs of Police (IACP)
- Indiana Association of County Commissioners (IACC)
- Indiana Association of Regional Councils (IARC)
- Indiana Driver Education Association (IDEA)
- Indiana Metropolitan Planning Organizations Council
- Indiana Motor Carriers Association (IMCA)
- Indiana Prosecuting Attorneys Council (IPAC)
- Indiana Sheriffs' Association (ISA)
- Institute of Transportation Engineers (ITE)
- Insurance Institute of Indiana (III)
- National Association of County Engineers (NACE)
- Operation Lifesaver Indiana (OLIN)
- Students Against Destructive Decisions (SADD)

4 SHSP DEVELOPMENT HISTORY

4.1.1 Start up

When the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) was signed into law in August 2005, Indiana had already laid the groundwork for meeting a key requirement of the new federal transportation funding bill -- a Strategic Highway Safety Plan (SHSP) -- developed in consultation with key highway safety stakeholders. The "Leadership Team for Surface Transportation Safety in Indiana," had formed in 2000. The team's charter outlined the intent to develop a strategic safety plan that identified opportunities for achieving Indiana's safety goals through interagency sharing, coordination, and collaborating.

With Indiana's Safety Leadership Team already in place and at work, collaboration on the development of a comprehensive, data driven approach to highway safety as required by SAFETEA-LU was made easier with much of the work to identify safety strategies using statewide traffic crash data well underway.

4.1.2 AASHTO Strategic Highway Safety Plan

In 1998, AASHTO approved its Strategic Highway Safety Plan, which was developed with the assistance of the Federal Highway Administration, the National Highway Traffic Safety Administration, and the Transportation Research Board Committee on Transportation Safety Management. The plan identified strategies in 22 key emphasis areas that affect highway safety. Each of the emphasis areas provides strategies and an outline of what is needed to implement each strategy. The Indiana SHSP adopted these guides as starting points for development of countermeasures and action plans to address traffic safety problems identified within our state.

The State of Indiana committed in 2004 to participate with AASHTO in a national effort to reduce the number of fatal and injury crashes. The strategy called for states to develop comprehensive highway safety plans incorporating the AASHTO SHSP strategies.

In April of 2004, strategic planning began when a working group of agency representatives started development of a Comprehensive Safety Plan. The working group initially considered existing INDOT, regional and local transportation highway safety planning, which included the State Section 402 Highway Safety Plan and Annual Performance Plan (HSP), the annual Motor Carrier Safety Assistance Program (MCSAP) Commercial Vehicle Safety Plan (CVSP), and the Traffic Records Coordinating Committee (TRCC) strategic plan for data improvement.

With the AASHTO Strategic Highway Safety Plan providing a baseline of national goals for evaluating emphasis areas for Indiana, The working group reviewed data from highway safety agencies and previous feedback gathered from stakeholder organizations at Safety Summits held in 2002 and 2003. In each summit, local jurisdictions were invited to participate in teams made up of Enforcement, Engineering, Education and Emergency Response to look for opportunities to coordinate and cooperate with each other in the area of traffic safety. The summits provided input on local priorities in the areas of traffic safety.

The working group also evaluated data gathered and analyzed by the Center for the Advancement of Transportation Safety at Purdue University on statewide highway safety trends. The final input came directly from the executive leadership of the agencies on the safety leadership team. A facilitator guided discussion on development of strategies for each emphasis area on who, what, why, how, as well as barriers to implementing each strategy and identifying success indicators for each. Additional data was gathered to refine the emphasis areas and helped develop strategies for each. The working group evaluated the 6 areas and 22 national goals of the AASHTO plan against Indiana's safety needs, ultimately selecting four categories of needs with 13 emphasis areas for Indiana encompassing 37 strategic initiatives. FHWA approved the first SHSP in September 2006, allowing Indiana to obligate funds for Section 148 (Safety Program) eligible activities.

4.1.3 Successes

Indiana's original SHSP has resulted in improved cooperation between agencies and traffic safety partners as well as some notable accomplishments.

For example, during the 2007 session the General Assembly adopted House Bill 1237 requiring all occupants of passenger vehicles, including pickup trucks to wear seatbelts in all seating positions. Previously state law did not require backseat passengers over the age of 16 to wear seatbelts nor did it require occupants in pickup trucks, or those in vehicles registered as trucks to wear seatbelts. Governor Daniels signed the law on May 10 and it became effective July 1, 2007.

The Indiana Department of Natural Resources and the Indiana Department of Transportation completed the Greenways Master Plan to guide the development and expansion of a statewide system of trails for bicycle and pedestrian transportation statewide.

Indiana Project Crossroads, which has improved wireless E9-1-1 service throughout the entire state, is fully deployed and taking traffic.

Enhanced Integrated Interoperable Emergency Communications has improved. By December 1, 2007, construction of the Hoosier Safe-T system was essentially complete with 35,000 Voice System Users and 700 Mobile Data System Users. These users include 17 State Agencies, 64 County Sheriff's Offices, 290 local law enforcement agencies, 92 County EMA agencies, 52 County EMS Services, 399 local fire departments/services, 3 Federal Agencies, 21 School Districts, 68 Hospitals, and 29 Universities.

The initial SHSP identified data improvement as an emphasis area. Through the leadership of ICJI and with the assistance and guidance of the Indiana Traffic Records Coordinating Committee, Indiana's crash record system today is recognized as one of the best in the nation. It continues to improve both in the quality of data collected and in the ability of analysts to utilize that information. While not identified with its' own emphasis area in this document, data improvement is recognized as an integral element of problem identification and will be part of individual countermeasures as necessary.

4.1.4 Abandoned Strategies

Two strategies in the original SHSP were abandoned as the result of lessons learned. Emergency Vehicle Traffic Signal Preemption on Routes to the rural Interstate System, was dropped after it was determined that Emergency Vehicle Traffic Signal Preemption is better suited to an urban setting, Emergency Vehicle Traffic Signal Preemption is unlikely to significantly reduce overall crash to care time in rural areas.

Using GPS units for locating crashes by latitude and longitude in police crash reports was dropped after evaluation of the available GPS devices and a review of the experiences of other states, it was determined that this approach is not currently viable. A revised strategy to allow officers to use computer maps to record crash location automatically in their reports is being pursued.

4.1.5 Revision of the plan

In January 2009, with the promulgation of new regulations in 23 CFR Part 924 on the Highway Safety Improvement Program, INDOT began a process to evaluate and revise the original SHSP. This action to comply with new rules and guidance set a target of having a new FHWA approved plan in place before the start of federal fiscal year 2011. Rather than adapting and revising the existing plan this SHSP is a new document incorporating lessons learned from Indiana's first SHSP and best practices from the experiences of other states.

This new document provides coordination of purpose, data sources, problem identification, emphasis areas and partnerships. The lead state agencies evaluate implementation action plans annually as part of federally required highway safety action plans and reports;

Highway Safety Improvement Program (Per 23 CFR 924)

Highway-Rail Grade Crossing Safety Action Plan (Per 49 U.S.C. § 202)

Highway Safety Plan (Per 23 U.S.C. § 402)

Commercial Vehicle Safety Plan (Per 49 CFR 350)

5 TRAFFIC CRASH DATA SOURCES

5.1 Overview

Indiana highway safety analysts have available data from several systems with which to examine traffic crashes. These include:

- Fatality Analysis Reporting System (FARS) maintained by the National Highway Transportation Safety Administration (NHTSA)
- Automated Reporting Information Exchange System (ARIES), which is the Web portal to the Indiana Vehicle Crash Report System database maintained by ISP
- Railroad Accident/Incident Reporting System (RAIRS) maintained by the Federal Railroad Administration (FRA) Office of Safety Analysis
- Motor Carrier Management Information System (MCMIS) maintained by the Federal Motor Carrier Safety Administration (FMCSA)
- Crash Outcome Data Evaluation System (CODES) in Indiana, consists of linked statewide crash, EMS and Hospital data that match vehicle, crash and human behavior characteristics to their specific medical and financial outcomes

These individual databases carry with them individual strengths and weaknesses that must be considered when employing them in analysis.

5.2 Automated Reporting Information Exchange System (ARIES)

ARIES hosts Indiana's database of all motor vehicle crash reports transmitted to the ISP central repository since 2003. One of the strengths of ARIES is that it is a nearly complete picture of all crashes regardless of severity, which provides a great deal more information on which to evaluate performance. As the database and electronic reporting have matured over the five years since its deployment, electronic crash submissions have increased from 32% to nearly 100 percent, to the point that paper crash reports are being eliminated. Additionally, the timeliness of crash report submissions has improved from 8% of reports submitted within 5 days in 2003 to 83% submitted within 5 days in August 2009. A weakness of ARIES is that it is an "as submitted" database and crash reports are not edited for accuracy after submission. Although the automated process is continually improving, erroneous data may escape built-in automatic checks. Further, it is a "Live" database, meaning there is no cut-off for entry or supplementing (correcting) of crash reports. For example, if a police agency finds that a crash report from 2003 had not been transmitted to the database, it can be submitted at any time. In addition, while most reports are transmitted to the database within five days, it is possible that some will not be transmitted for several weeks, months or years. ARIES data records are not always supplemented, or if they are, not always in a timely fashion. An example would be when an injured person dies after a crash report is submitted.

Despite these weaknesses, the volume of available data may allow analysts to account for outlying records that contain erroneous data. At INDOT for example, engineers perform statewide programmatic crash analysis by examining "severe crashes" that includes not just fatal crashes, which account for less than one half a percent of all crashes, but crashes producing deaths or incapacitating injuries, which increases the data sample to about two percent of all crashes.

5.3 Fatality Analysis Reporting System (FARS)

FARS is a collection of data documenting all qualifying fatal crashes since 1975. To be included in this database, a crash had to involve a motor vehicle traveling on a roadway customarily open to the public, and must result in the death of a person (an occupant of a vehicle or a non-motorist) within 30 days of the crash. Because it is a national database, FARS data is most useful in evaluating a state's performance against other states. FARS data benefits from a rigorous set of

definitions and rules that govern the classification of crashes. Each death is scrutinized by specialists at both the state and federal level before inclusion in the database. A weakness of FARS data results from this heightened scrutiny and the fact that not all states process data in as timely a manner as Indiana, so that it takes up to a year for NHTSA to publish its final data.

5.4 Railroad Accident/Incident Reporting System (RAIRS)

The Federal Railroad Administration (FRA) Office of Safety Analysis tracks highway-rail grade crash incidents through reports submitted by railroads and is updated monthly. Like FARS, this data has been collected nationally since 1975 and can be used to evaluate a state's performance with other states. It is more complete than FARS by including data on all crashes not just fatalities. It is more timely than FARS, with data generally available within 90 days of occurrence. It is more complete than ARIES because non-motor vehicle crashes involving trains (pedestrians, bicyclists, etc.) are not reported on Indiana traffic crash reports.

Since 1977, the number of crashes at highway-rail crossings in Indiana has been reduced more than 80%. The overall number of crossings has been reduced 40% through permanent closures and hundreds of crossings have received upgrades to train-activated warning devices since that time. The percentage of annual Indiana traffic deaths occurring at crossings has fallen from 6.2% to 2.2% over thirty years. Today, increasingly, crashes at railroad crossings occur where train-activated flashing lights or flashing lights and gates are in place and operating.

5.5 Motor Carrier Management Information System (MCMIS)

The Federal Motor Carrier Safety Administration (FMCSA) maintains a specialized database of data regarding large trucks and buses. MCMIS contains information on the safety fitness of commercial motor carriers and hazardous material shippers subject to Federal Motor Carrier Safety Regulations and Hazardous Materials Regulations.

The MCMIS crash data includes data on crashes reported by states to the FMCSA through the SAFETYNET computer reporting system. The crash file includes the National Governors' Association (NGA) recommended data elements collected on trucks and buses involved in crashes that meet the NGA recommended crash threshold. An NGA reportable crash must involve a truck (a vehicle designed, used, or maintained primarily for carrying property, with a gross vehicle weight rating or gross combination weight rating of more than 10,000 lbs.) or bus (a vehicle with seats for at least nine people, including the driver). The crash must result in at least one fatality; one injury where the person injured is taken to a medical facility for immediate medical attention; or one vehicle having been towed from the scene as a result of disabling damage suffered in the crash.

5.6 Crash Outcome Data Evaluation System (CODES)

The Indiana Department of Homeland Security contracts with the Center for Road Safety (CRS) at Purdue University to maintain the computer systems and perform the linkages and subsequent analyses for CODES.

CODES linked crash outcome data are a unique resource because they identify crash characteristics for both the injured and the non-injured. Analyses are less likely to be biased when data include characteristics of persons involved in crashes who have unexpected outcomes: persons who are injured in spite of using safety equipment and persons who are not injured in spite of not using safety equipment.

6 CRASHES GENERALLY

6.1 Crashes are a serious public health problem

In January 2008, the Indiana State Department of Health provided a report on the medical impact of motor vehicle crashes in Indiana. Injuries and deaths caused by crashes remain a leading public health problem. Between 2003 and 2005, crashes were the ninth leading cause of death for Indiana residents, claiming 2,881 lives with an age-adjusted rate¹ of 15.4 per 100,000 people. Based on hospital discharge data for the three year period, crashes accounted for approximately 7.3% of all outpatient/Emergency Department visits and approximately 10.5% of all inpatient hospitalizations. The economic burden of motor vehicle crash injuries is also enormous. The total of charges during 2003 to 2005 for inpatient hospitalizations and outpatient/Emergency Department visits was \$412 million. These medical costs alone do not account for lost productivity, property damage, higher insurance premiums, and other financial costs to individuals, their families, their communities, and society as a whole. Data show the need to direct prevention efforts to specific groups, such as older adults, teens, and children in order to reduce the burden on Indiana residents and the state's economy.

6.1.1 Indiana Hospital Discharge Data, 2003–2005

6.1.1.1 Mortality

Crashes were the ninth leading cause of death for Indiana residents, claiming 2,881 lives.

Males were 2.5 times more likely to die in a crash than females (22.1 per 100,000 vs. 8.9 per 100,000).

During 2004 and 2005, white males had the highest rate of death due to crashes (23.3 per 100,000 and 23.3 per 100,000) than all other race/gender categories.

Young adults (20-24 year olds) had the highest age-adjusted crash death rate (29.7 per 100,000) of all ages.

6.1.1.2 Inpatient Admissions for Motor Vehicle Crashes, 2003-2005

Crashes accounted for approximately 10.5% (9,859 admissions) of all hospital inpatient admissions.

Males were 1.6 times more likely to be admitted to the hospital following a crash than females (64.4 per 100,000 compared to 40.8 per 100,000).

Blacks were admitted to the hospital due to crashes more than whites (55.0 per 100,000 versus 47.3 per 100,000).

The age group with the highest hospital admission rate due to crashes was 15-19 year olds.

6.1.1.3 Outpatient/Emergency Department Visits for Motor Vehicle Crashes, 2003-2005

Crashes accounted for approximately 7.3% (106,849 visits) of all hospital outpatient/Emergency Department visits.

Females were less likely (0.89 times) to be seen in an outpatient/Emergency Department facility following a crash than males (537.5 per 100,000 compared to 605.5 per 100,000).

¹ Age-adjustment is a statistical process applied to rates of disease, death, injuries or other health outcomes that allows communities with different age structures to be compared.

Blacks were more likely to visit the outpatient/Emergency Department than whites (792.8 per 100,000 versus 488.5 per 100,000).

Those 15-19 years of age had the highest rate of outpatient/Emergency Department visits due to crashes compared to all other age groups.

6.1.1.4 Adolescents and Risk Behavior

In 2007, 11.9% of high school students reported driving one or more times in the previous 30 days while they were under the influence of alcohol.

9.2% of high school students (2007), 8.2% (2005), and 10.6% (2003) reported that they never or rarely wore a seat belt when riding in a car driven by someone else.

6.1.1.5 Trauma Care

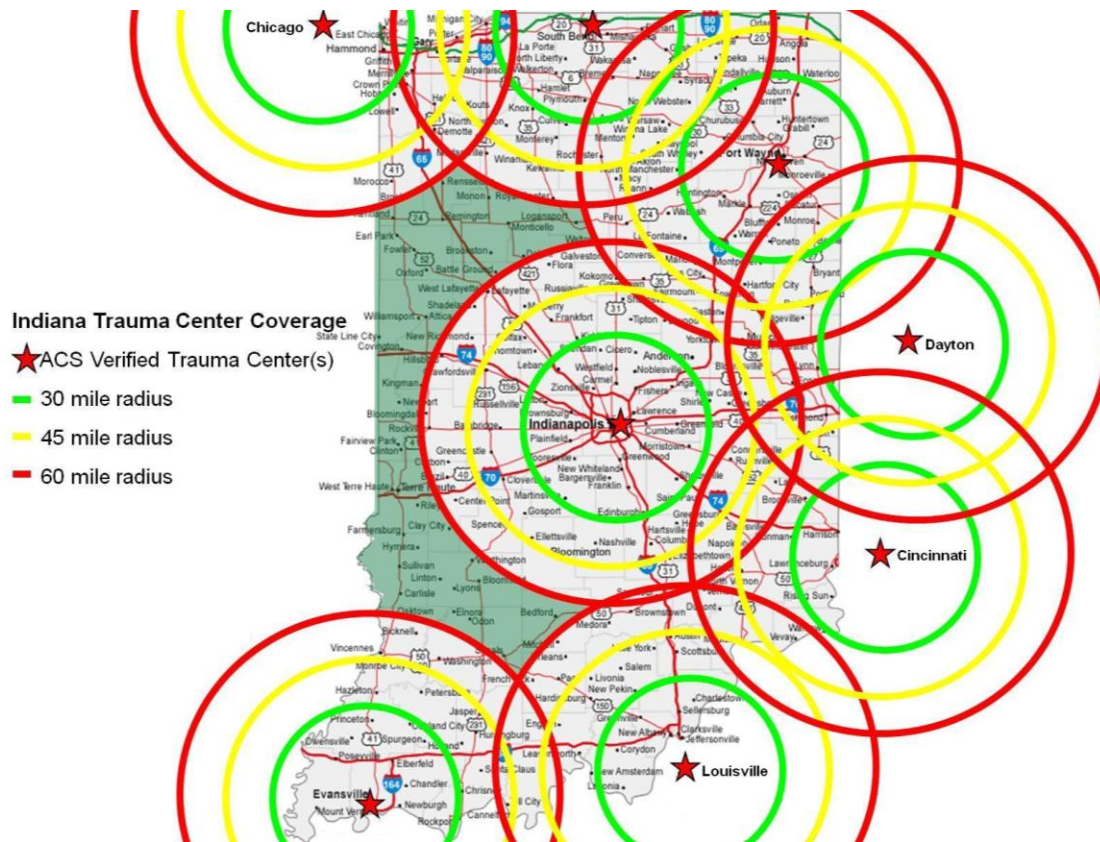
In August 2009, the State Department of Health reported to the Traffic Records Coordinating Committee (TRCC) on progress establishing Indiana's Trauma Registry. Funding for the trauma registry was provided through a TRCC NHTSA § 408 grant.

A trauma system needs assessment began in 2009. It noted that there are 129 acute-care hospitals with emergency departments across Indiana. 16 counties do not have a hospital – Newton, Benton, Carroll, Fountain, Parke, Owen, Brown, Union, Franklin, Ohio, Switzerland, Martin, Pike, Crawford, Spencer, and Posey. 46 of the 129 acute care hospitals are considered rural. 35 Hospitals are designated as Critical Access Hospitals. Only four metropolitan centers host eight American College of Surgeons - Committee on Trauma (ACS-COT) verified Level I or Level II trauma centers;

- Indianapolis
 - Level I
 - Wishard, Riley (Pediatric), Methodist
- Evansville
 - Level II
 - St. Mary's, Deaconess
- Fort Wayne
 - Level II
 - Parkview, Lutheran
- South Bend
 - Level II
 - Memorial

When combined with coverage provided by ACS-COT trauma centers in neighboring states most locations in Indiana are within 60 air-miles of a trauma center.

Figure 5 Trauma Center Coverage



A task force of more than 100 members is working to strengthen Indiana's trauma care system. Participants include existing trauma centers, non-trauma center and critical access hospitals, doctors, nurses, injury prevention, administrators, legislators, professional organizations, state agencies, insurance industry representatives and medical education institutions. Their work has five main goals:

1. Prevent as many injuries as possible
2. Get the severely injured patient to the best source of care as quickly as possible
3. Immediate response/care at the scene
4. Rapid transport from the scene to a qualified trauma hospital
5. Qualified trauma hospitals capable of delivering immediate medical care and ongoing treatment for the injured

6.2 Crashes are not accidents

The word "accident" conveys a sense that the losses incurred are due to fate and devoid of rational explanation or predictability. There are in reality a host of contributing factors that influence the incidence and outcome of "crashes." The word "crash" indicates in a consistent and unemotional way what occurred, while "accident" implies an explanation of why it occurred. It appears in the SHSP only as part of quotations or citation of law.

6.3 Contributors, Primary Factors and "Cause"

Motor vehicle crashes almost never have a single "cause." This may be best illustrated by the work of Dr. William Haddon, Jr., who contributed to traffic safety through his research on motor

vehicle injuries and his early leadership of the National Highway Traffic Safety Administration. His “Haddon Matrix,” is a common starting point for identifying crash contributors and countermeasures. He identified three main categories of contributing factors – human, vehicle and environment.

Table 1 The Haddon Matrix

	CONTRIBUTING FACTORS			
Phase	HUMAN	VEHICLE	ENVIRONMENT	
			PHYSICAL	SOCIO-ECONOMIC
Pre-Crash (Prevention)	Information Attitudes Ability Impairment Distraction Law enforcement	Roadworthiness Lighting Braking Handling Speed management	Road design Speed limits Other mode Conflicts Off-road land use Weather Animals	Culture Law Economy
Crash (Mitigation)	Occupant Protection Safety Equipment	Restraint design Cockpit integrity Impact reducing design	Crashworthy features	
Post-Crash (Treatment)	First responder skill	Ease of extrication Fire Risk	Access to medics Access to trauma care Incident control	

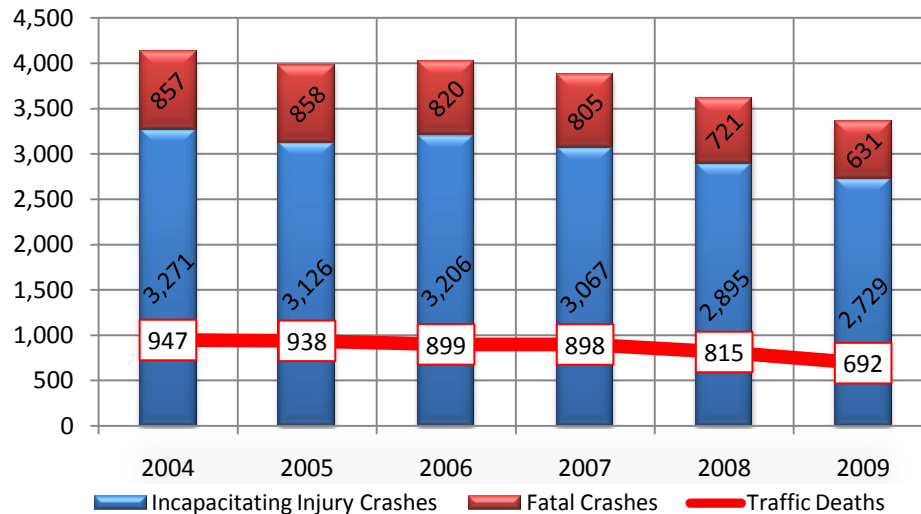
Human factors involve the driver’s actions (violating traffic laws) or condition (effects of alcohol or drugs, inattention, decision errors, and age). Environmental factors include the physical design of the roadway, roadside hazards, weather, and roadway integrity. Haddon also noted that the socio-economic environment encompassing cultural norms, laws and economics also play a role in the number and outcome of traffic crashes. Vehicle factors include any failures in the vehicle or its design, but today these contribute significantly less often to crashes than do human or roadway environment factors. The SHSP seeks to address crashes by evaluating all contributing factors involved in a crash individually. Consequently, a single crash is often counted in several areas of emphasis. For example, a crash at a highway-rail crossing involving a 16 year old driver would contribute to counts of both young driver involved crashes and grade crossing crashes, additionally it would be counted among the driver behavior contributors identified.

7 PROBLEM IDENTIFICATION

7.1.1 General Traffic Safety Trends

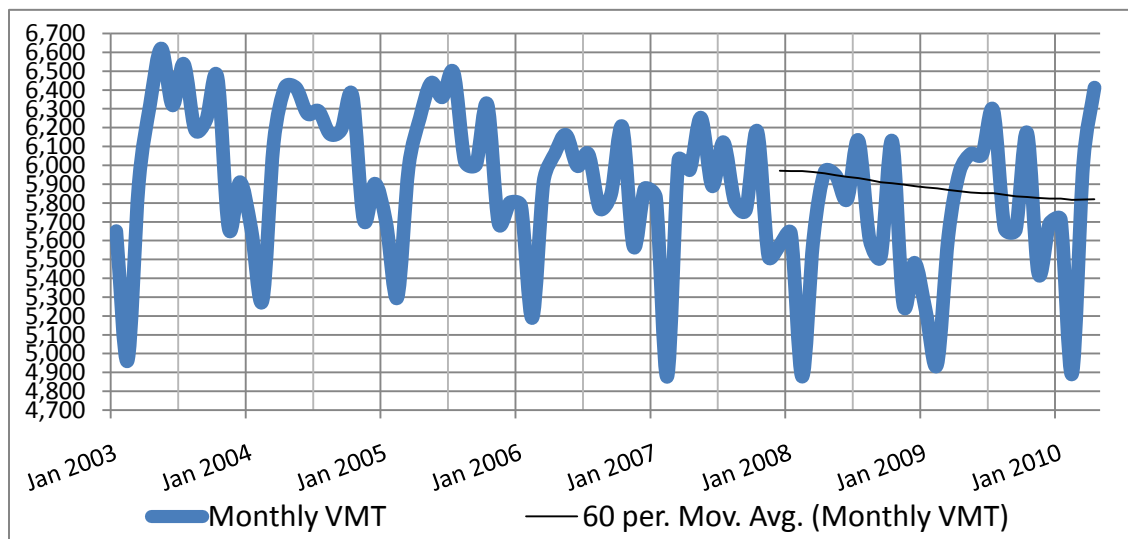
The Automated Record Information Exchange System (ARIES) database is a record of all motor vehicle crashes investigated by a law enforcement agency that have been transmitted to the ISP central repository since January 1, 2003. It shows a moderate trend of reduced incidents resulting in incapacitating injury or death. (Data in the following tables is from ARIES unless otherwise noted)

Figure 6 Severe Crashes



Clearly, the combined education, enforcement, engineering and EMS traffic safety efforts are contributing to recent declines in serious crash outcomes. However, the combined effects of a reduction in vehicle miles traveled (CHART 1), increased unemployment and higher fuel costs are believed to be significant influences on the decline in severe crashes recorded in 2008 and 2009.

Figure 7 Monthly Traffic Volume



SOURCE FHWA TVT

8 EMPHASIS AREAS

This SHSP is not intended to address every traffic safety problem or need. Rather it is a means to focus attention on the state's greatest traffic crash problems. The data-driven emphasis areas are:

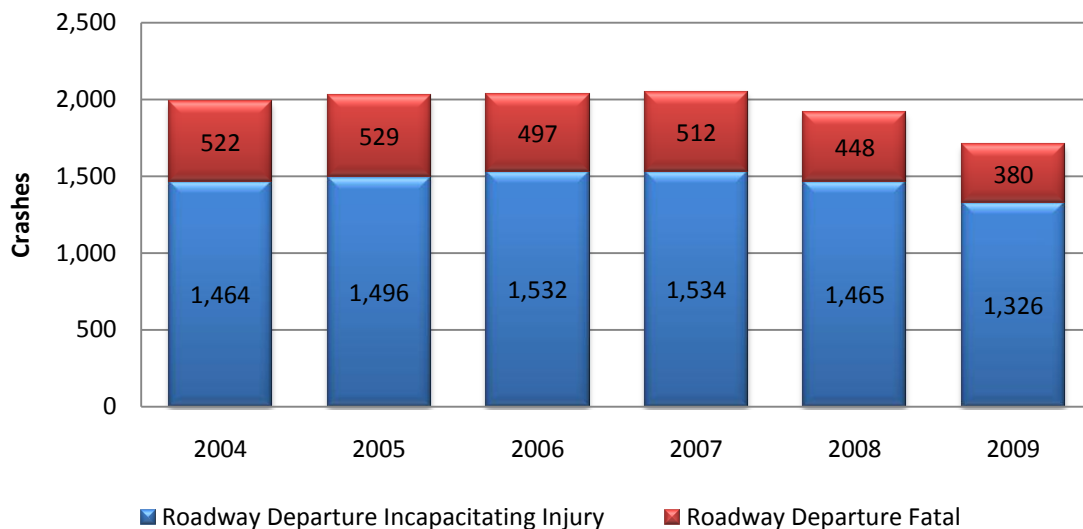
1. Roadway Departure Crashes
2. Intersection Crashes
3. Large Vehicle Conflict Crashes
4. Roadway Restriction Related Crashes
5. Vulnerable User Crashes
6. Human Factor Contribution to Crashes

These strategies and countermeasures to address the emphasis areas are an array of ongoing, new, or proposed safety strategies, which contribute significantly to reaching the objectives of the plan. Each strategy is identified through data analysis, application of the latest research, and best practices from across the nation within the disciplines of engineering, education, enforcement, and emergency services and are evaluated using a partnership approach.

8.1 Roadway Departure Crashes

FHWA defines a roadway departure crash as a non-intersection crash that occurs after a vehicle crosses an edge line or a center line, or otherwise leaves the traveled way. These crashes produce half of all severe outcome crashes and nearly two out of three fatal crashes.

Figure 8 Roadway Departure Crashes**



**** CRASH RECORDS OF THE TYPE: HEAD ON, NON-COLLISION, OPPOSITE DIRECTION SIDESWIPE, RAN OFF ROAD, AND SAME DIRECTION SIDESWIPE**

Lead Agency: INDOT

Implementation: HSIP

Performance benchmark: Reduce roadway departure severe crashes by 49 over the previous year

Strategies and Countermeasures: As noted earlier, potential strategies and countermeasures for roadway departure crashes are detailed in six volumes of guidance produced by the National Cooperative Highway Research Program for implementing the AASHTO Strategic Highway Safety Plan.

The 500 Series of guides include strategies and countermeasures to address traffic safety problems, and provide a model implementation process. The volumes addressing roadway departure crash countermeasures include:

Volume 3: A Guide for Addressing Collisions with Trees in Hazardous Locations

Volume 4: A Guide for Addressing Head-On Collisions

Volume 6: A Guide for Addressing Run-Off-Road Collisions

Volume 7: A Guide for Reducing Collisions on Horizontal Curves

Volume 8: A Guide for Reducing Collisions Involving Utility Poles

Volume 20: A Guide for Reducing Head-on Crashes on Freeways

8.2 Intersection Crashes

Crashes at the intersection of two or more roadways in Indiana produce one in four of all severe outcome crashes and about one in five fatal crashes. In 2008 the Federal Highway Administration included Indiana as one of eleven “Intersection Focus States” along with Alabama, Arizona, Florida, Georgia, Louisiana, Mississippi, South Carolina, Tennessee, and Wisconsin. (Based on 2005 FARS data)

Figure 9 Signal Control Intersection Crashes

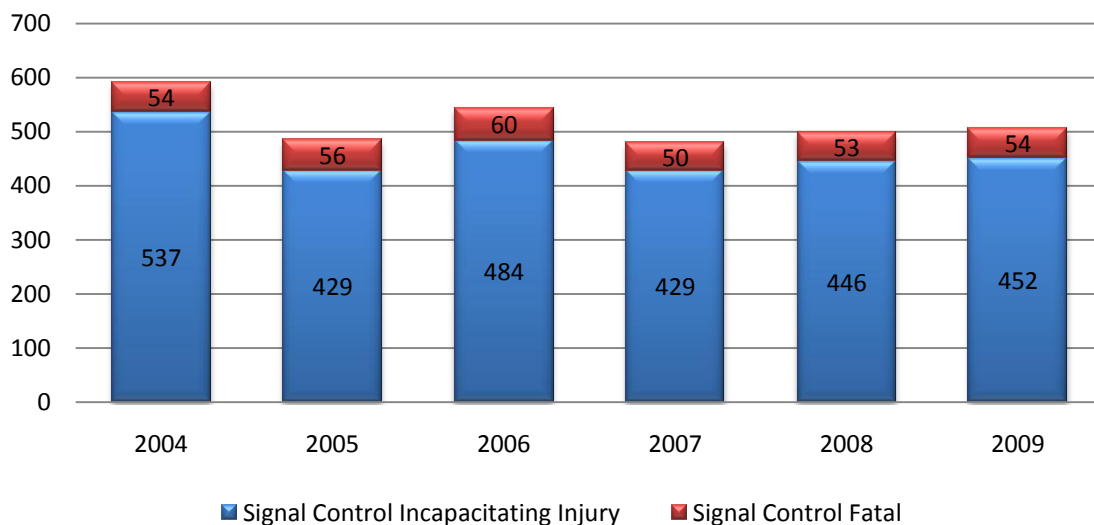
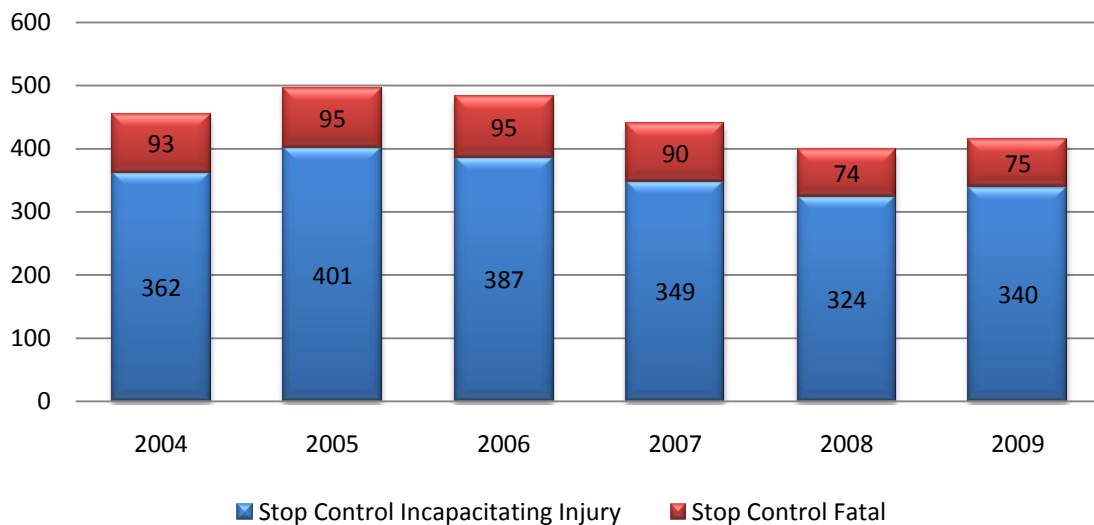


Figure 10 Stop Control Intersection Crashes



Lead Agency: INDOT

Implementation: HSIP

Performance benchmark: Reduce intersection severe crashes by 20 over the previous year

Strategies and Countermeasures: Potential strategies and countermeasures for intersection crashes are detailed in NCHRP 500 Series Volumes:

Volume 5: A Guide for Addressing Unsignalized Intersection Collisions

Volume 12: A Guide for Reducing Collisions at Signalized Intersections

8.3 Large Vehicle Conflict Crashes

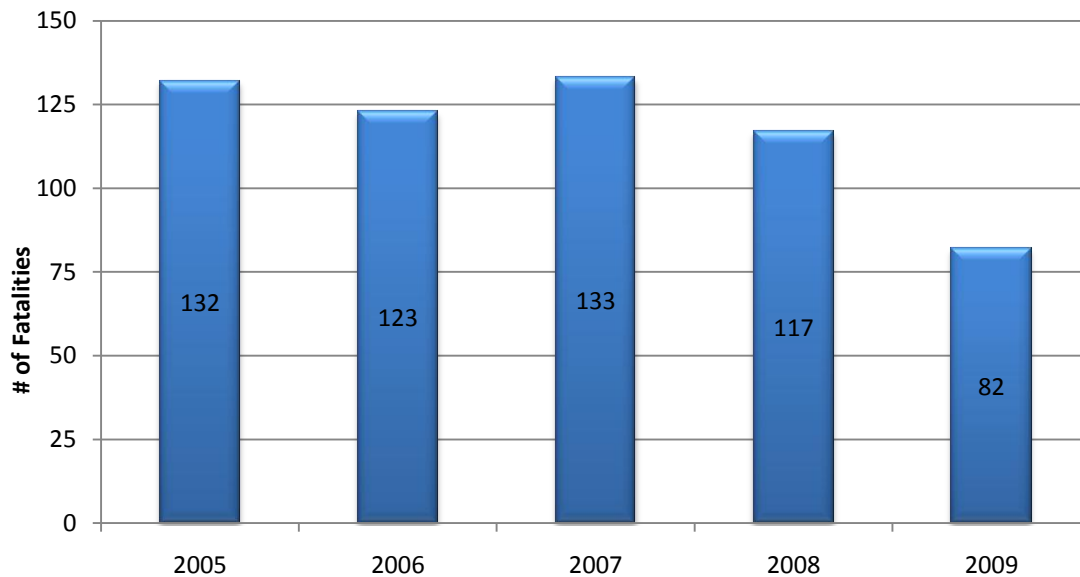
As the largest vehicles in size and weight on the roadway, trucks with a gross vehicle weight rating (GVWR) greater than 10,000 pounds place all other lesser modes using Indiana highways at a safety disadvantage. Where railroad tracks cross roadways, even the largest motor vehicles are at a disadvantage in a conflict with a train. Because of Indiana's geographic location within the nation's transportation network, our state experiences high volumes of both large truck and train traffic and higher volumes of crashes involving these modes.

8.3.1 Large Trucks

In 2009, 189,676 traffic collisions were reported in Indiana by law enforcement.

Of those, 10,542 (5.6 percent) involved a large truck. Less than one percent (82 /10,542) of the collisions involving large trucks resulted in one or more fatalities. Fatal collisions involving large trucks declined on average from 2005 to 2009 over 10 percent, with nearly a 30 percent decline from 2008 to 2009.

Figure 11 Fatalities Involving Large Trucks



SOURCE: DATA DERIVED FROM 2009 INDIANA TRAFFIC SAFETY FACT SHEET – LARGE TRUCKS BY THE CENTER FOR CRIMINAL JUSTICE RESEARCH

The Commercial Vehicle Enforcement Division of the ISP (ISP-CVED) administers federal funds apportioned by the Federal Motor Carrier Safety Administration (FMCSA) under the Commercial Motor Carrier Safety Assistance Program to support enforcement activities designed to reduce the number of people injured and killed in commercial truck and bus related crashes.

ISP-CVED annually produces the Indiana Commercial Vehicle Safety Plan required by 49 CFR 350 identifying the goals, objectives and strategies that will have the greatest impact on commercial motor vehicle safety improvement.

Lead Agency: *ISP*

Implementation: *CMVSP*

Performance benchmark(s): *Determined annually in the MOTOR CARRIER SAFETY ASSISTANCE PROGRAM COMMERCIAL VEHICLE SAFETY PLAN (49 CFR 350)*

Strategies and Countermeasures: Additional potential strategies and countermeasures for large truck involved crashes are detailed in NCHRP 500 Series Volume 13: A Guide for Reducing Collisions Involving Heavy Trucks.

8.3.2 Trains

Many of the nation's busiest rail lines pass through Indiana to and from the nation's largest rail freight hub located in Chicago, Illinois. The convergence of railroads and highways means that Indiana has about 6,000 public pedestrian and highway railroad grade crossings, which is more than all but four other states.

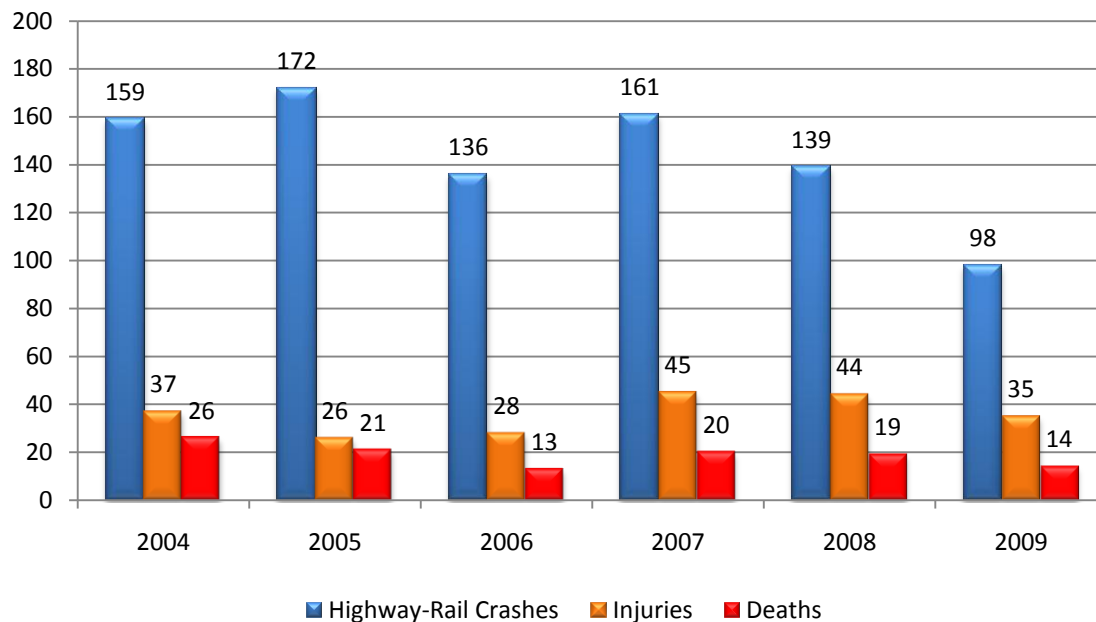
The number of highway-rail conflict points has resulted in crashes that rank Indiana as one of the ten states with the most crossing crashes, on average, over the past 3 years. Consequently, the Rail Safety Improvement Act of 2008 requires Indiana to create an action plan to identify specific solutions for improving safety at crossings. The act directs the plan to consider crossings closures or grade separations as countermeasures, and further requires a focus on crossings that either have experienced multiple crashes or are at high risk for crashes.

The goal of the action plan is to continue and accelerate if possible the downward trend in the occurrence of crossing crashes recorded over the past thirty years regardless of causation.

In 2008, more than two out of three grade crossing crashes took place where train-activated warning devices (flashing lights, or flashing lights and gates) were in operation. Almost half of all crashes involved gated crossings.

Potential strategies and countermeasures are identified in: Railroad-Highway Grade Crossing Handbook - Revised Second Edition August 2007. PUBLICATION NO. FHWA-SA-07-010.

Figure 12 Highway-Rail Crossing Crashes



SOURCE FRA RAILROAD ACCIDENT/INCIDENT REPORTING SYSTEM

Lead Agency: INDOT

Implementation: HIGHWAY-RAIL GRADE CROSSING SAFETY ACTION PLAN (49 U.S.C. § 202)

Performance benchmark: Reduce highway-rail grade crossing crashes by 12 over the previous year

Strategies and Countermeasures: In brief, the key items in the highway-rail crossing action plan include:

- Grade crossing warning device improvements
- Closing of redundant crossings
- Grade separation projects where cost-effective
- Participate in Operation Lifesaver Indiana Public Awareness & Media Plan
- Review Drivers Manual with Bureau of Motor Vehicles
- Evaluate Emerging Enforcement Technologies and Tactics
- Publish Law Enforcement Crossing Guide
- Create Training with Indiana Law Enforcement Academy
- Define and Identify Corridor Improvement Priorities
- Improve ARIES-FRA Database Compatibility
- Evaluate Emerging Innovative Countermeasures
- Conduct Regular Statewide Coordination
- Expedite passive crossing MUTCD compliance upgrades

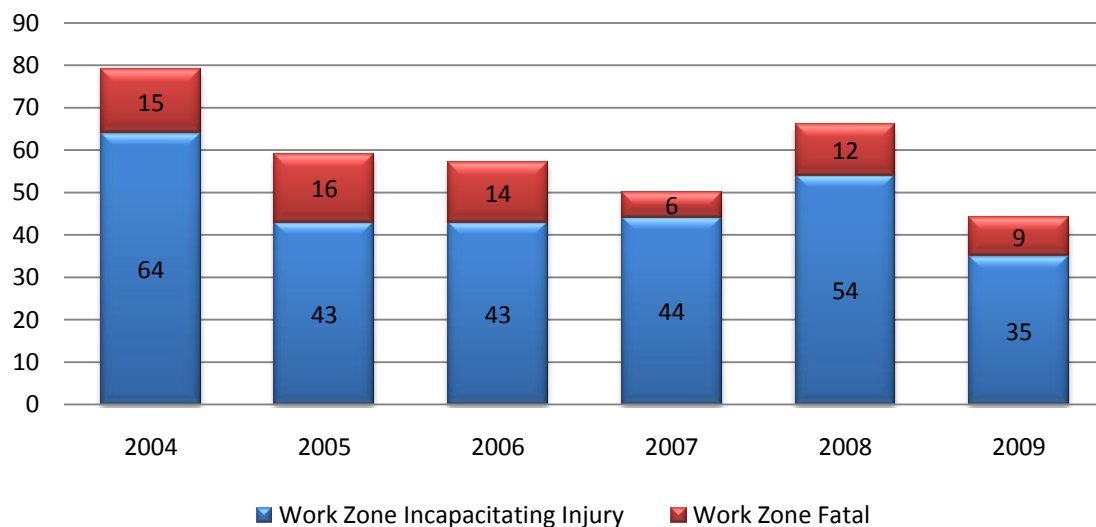
8.4 Roadway Restriction Related Crashes

Work zones and traffic incidents present road users with changes or obstacles on roadways that demand additional care and attention to the driving task. These restrictions to normal roadway use are either planned or are controlled during response therefore the dangers that they present can be managed. Unplanned road blockage resulting from traffic crashes or other incidents often result in congestion that can spawn secondary crashes, which can be more catastrophic than the original incident.

8.4.1 Work Zones

While they are a small contributor to Indiana's overall crash problem, they are uniquely controllable and appropriate for enhanced engineering, education, law enforcement and emergency response countermeasures.

Figure 13 Work Zone Crashes



Lead Agency: INDOT

Implementation: HSIP

Performance benchmark: Reduce severe work zone crashes by six over the previous year

Strategies and Countermeasures: Potential strategies and countermeasures for work zone crashes are detailed in NCHRP 500 Series Volume 17: A Guide for Reducing Work Zone Collisions.

8.4.2 Incident clearance

Like work zones, while they are a small contributor to Indiana's overall crash problem, incident congestion crashes are often more severe than the original incident, however they are manageable and can be reduced or mitigated by way of coordination between highway traffic management resources, law enforcement and other emergency responders including fire, EMS, hazardous material control and vehicle recovery.

In mid 2007, personnel from the FHWA, INDOT and ISP and other stakeholders began meeting to discuss pursuing the Quick Clearance concept for Indiana named "IN-Time." On January 20, 2009, a multi-lateral working agreement was adopted to establish a commitment that leaders of the approving agencies and partners will lead and instruct personnel to have an "Open Roads Philosophy." All will work together to accomplish improved safety, clearance and communication

during traffic incidents and/or obstructions on all public roadways in the State of Indiana. In short, the “Open Roads Philosophy” means; that all agency responders, after ensuring their own personal safety and the safety and security of any incident victims, will have as their top priority reducing congestion and the higher risks of secondary crashes for public/motorist safety.

Lead Agency: ISP

Implementation: To be determined by the “IN-Time” working group

Performance benchmark(s): To be determined in 2010 (The new version of the Indiana crash report tracks secondary crashes.)

Strategies and Countermeasures: To be determined

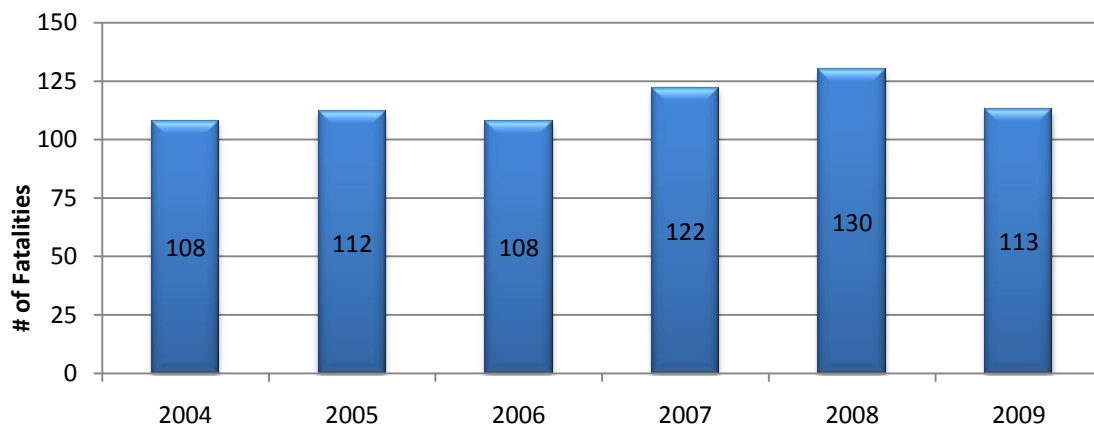
8.5 Vulnerable User Crashes

While cars and trucks make up the majority of the traffic on Indiana roadways, other users without the protection of a surrounding automobile body and occupant restraints also travel the road system. These users are at greater risk for incapacitating injury or death in conflicts with other traffic.

8.5.1 Motorcycles

From 2008 to 2009, fatalities and injuries to Indiana motorcycle riders declined to the lowest level since 2006. In 2009, Indiana motorcyclists were involved in 3,276 collisions, resulting in 113 fatalities. Indiana requires a motorcycle license or endorsement for the operator of any motorized two-wheel vehicle that can be driven on public roadways at 25 miles per hour or more (see IC 9-21-11-12 and IC 9-24-8). In 2009, slightly more than one-half of all motorcycle and moped operators involved in crashes had some type of valid motorcycle license (Table 5). In fatal crashes, only 40.2 percent of operators had valid motorcycle licenses. Moped operators involved in collisions were much more likely to be completely unlicensed (42.6 percent in 2009). In comparison, fewer than three percent of collision-involved motorcycle operators were unlicensed from 2005 through 2009.

Figure 14 Motorcycle Fatalities²



DATA DERIVED FROM THE 2009 INDIANA TRAFFIC SAFETY FACT SHEET – MOTORCYCLES BY THE CENTER FOR CRIMINAL JUSTICE RESEARCH

² Motorcycle and moped crashes are combined for this data to follow NHTSA's model of grouping motorcycles and mopeds as one vehicle class

Lead Agency: ICJI

Implementation: HSP

Performance benchmark: Determined annually in the Indiana Highway Safety Plan (23 U.S.C. § 402)

Strategies and Countermeasures: Based on recommendations from NHTSA, an active media campaign both to raise awareness among motorists that motorcycles are vulnerable roadway users and to promote how riders can complete training to become properly licensed to ride in Indiana is underway.

ICJI, in cooperation with the Indiana Department of Education (DOE), is identifying locations where motorcycle training courses can be safely conducted for the purpose of licensing motorcycle operators and conducting basic and advanced rider training courses. Special consideration is given to counties where there are a large number of registered motorcycles and classes are currently not being offered. Funding for the purchase of additional training motorcycles to be used during the rider training courses will ensure that enough training can be held to meet the demand of the number of riders wanting to become licensed.

Additional potential strategies and countermeasures for motorcycle crashes are detailed in NCHRP 500 Series Volumes:

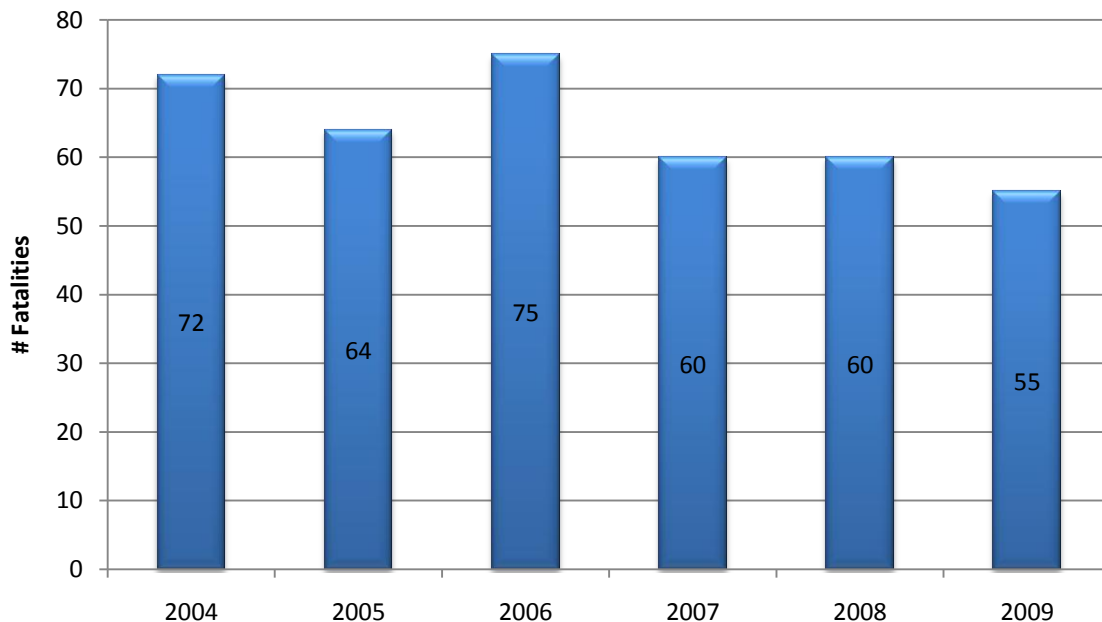
Volume 22: A Guide for Reducing Collisions Involving Motorcycles

Volume 2: A Guide for Addressing Collisions Involving Unlicensed Drivers and Drivers with Suspended or Revoked Licenses

8.5.2 Pedestrians

Pedestrian deaths are also one of NHTSA's 14 performance measures. Each year since 2004 between six and nine percent of all fatalities on Indiana roadways were pedestrians. Although the number of fatalities is alarming, the locations of the incidents are geographically distributed widely across the state making targeted efforts a challenge.

Figure 15 Pedestrian Fatalities



Lead Agency: ICJI

Implementation: HSP

Performance benchmark: Determined annually in the Indiana Highway Safety Plan (23 U.S.C. § 402)

Strategies and Countermeasures: Countermeasures include distribution of educational materials to people of all ages to help promote awareness among drivers and safely traveling or crossing roadways by pedestrians.

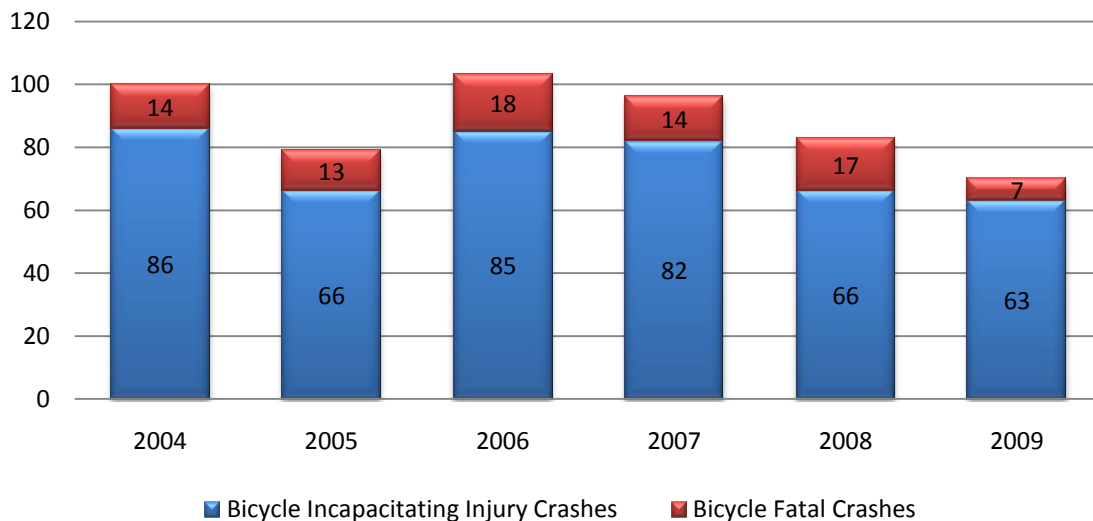
The Safe Routes to School (SRTS) program is a federally required program to encourage and reduce the risk of pedestrian and bicycle travel to schools administered by INDOT. A multidisciplinary advisory committee reviews all infrastructure and non-infrastructure project applications made during an annual call for projects and selects projects for funding. Federal rules require at least 70% of the awards must address infrastructure improvements and 10% must address non-infrastructure programs with the remaining 20% eligible for either type of project.

Additional potential strategies and countermeasures for pedestrian crashes are detailed in NCHRP 500 Series Volume 10: A Guide for Reducing Collisions Involving Pedestrians.

8.5.3 Bicycles

Like pedestrians, bicyclists are also extremely vulnerable roadway users. Although the crash trend in recent years has been downward, there is heightened interest in bicycling for both regular travel and health benefits that could result in increased bicycle trips, thus increasing exposure.

Figure 16 Bicycle Crashes



Lead Agency: INDOT

Implementation: HSIP

Performance benchmark: Reduce the number of bicycle fatalities by 2 over the previous year

Strategies and Countermeasures: The SRTS program noted earlier in the pedestrian emphasis area in part addresses bicycle safety.

Some, bicycle safety improvements could be considered intersection safety improvements. For example, making drivers and bicyclists more aware they are approaching an intersection so they are better prepared to comply with the traffic control devices and rules of the road at the intersection, or, to provide drivers and bicyclists better views of one another to avoid potential conflicts.

Striped bicycle lanes provide marked areas for bicyclists to travel along roadways and provide for more predictable movements for both bicyclists and motorists. Striped bike lanes can be incorporated into a roadway when it is desirable to delineate which available road space is for exclusive or preferential use by bicyclists.

Additional potential strategies and countermeasures for bicycle crashes are detailed in NCHRP 500 Series Volume 18: A Guide for Reducing Collisions Involving Bicycles.

8.6 Human Factors Contribution to Crashes

Motor vehicle crashes almost never have a single “cause.” Traffic safety practitioners generally regard human factors, those that involve the driver's actions (speeding and violating traffic laws) or condition (effects of alcohol or drugs, inattention, decision errors, and age) as the primary contributing factors in most crashes.

The traffic safety division (TSD) of ICJI administers federal funds apportioned by the National Highway Traffic Safety Administration (NHTSA) to support education and enforcement activities designed to reduce the number of people injured and killed in traffic crashes resulting from human factors.

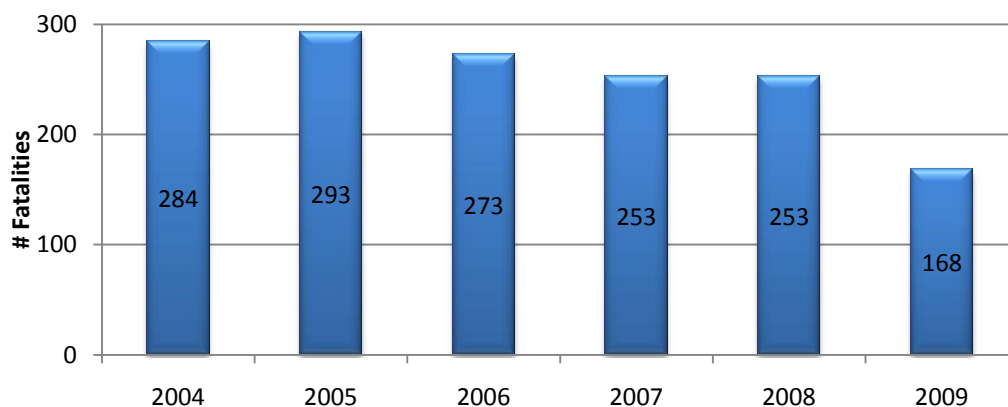
ICJI annually produces the Indiana Highway Safety Plan (HSP) required by 23 U.S.C. § 402 identifying the goals, objectives and strategies that will have the greatest impact on highway safety improvement. These measures can change based upon federal guidance and state initiatives. Therefore, the human behavior measures identified in this SHSP may be amended annually to adapt to emerging issues such as distracted driving

Potential strategies and countermeasures for major Driver Behavior and Vulnerable Users issues are suggested in NHTSA Report DOT HS 811 081 Countermeasures That Work: A Highway Safety Countermeasure Guide For State Highway Safety Offices (4th Edition, 2009).

8.6.1 Alcohol

In 2009, 157 (24.9 percent) of 631 fatal collisions and 168 (24.3 percent) of 692 fatalities in Indiana involved alcohol. The incidence of impaired driving in fatal collisions has decreased over the last five years. In 2009, 24.9 percent of all fatal traffic collisions in Indiana were alcohol related, which represented a 5.3 percentage point decrease from 2008.

Figure 17 Alcohol Related Fatalities



Lead Agency: ICJI

Implementation: HSP

Performance benchmark: Determined annually in the Indiana Highway Safety Plan (23 U.S.C. § 402)

Strategies and Countermeasures: An Impaired Driving Program Manager plans, coordinates, and monitors impaired driving countermeasure projects.

Fatal Alcohol Crash Teams (FACT) and DUI Taskforce's in Indiana strive to eliminate procedural mistakes that could lead to the suppression of important evidence in an Operating While Intoxicated case. FACTs aim is to develop uniform policies and procedures for investigations of serious alcohol-related crashes.

DUI Enforcement projects provide funding for overtime pay to DUI Taskforce officers in counties with a high percentage of alcohol-related crashes. Counties and cities determined through analysis to have a historically high concentration of impaired driver crashes are funded to conduct sustained yearlong countywide, multijurisdictional saturation patrols and sobriety checkpoints.

Standard Field Sobriety Training (SFST) and Drug Recognition Expert (DRE) Program provides funds for SFST training for law enforcement officers. Studies have shown that when an officer completes the SFST training course, they are four times more successful at identifying impaired drivers. All officers participating in federally funded enforcement activities must be SFST certified. The SFST training consists of 16 hours of training in detecting and testing an impaired driving, as well as preparing for, and presenting a case against the impaired driver.

The DRE program is designed to reduce personal injury and deaths on Indiana roadways by training law enforcement officers to recognize drug impaired drivers.

A Traffic Safety Resource Prosecutor (TSRP) trains law enforcement officers and prosecuting attorneys throughout the state on effective methods of investigating and prosecuting impaired drivers and offenders of other traffic violations.

The Indiana Excise Police's alcohol countermeasure programs to reduce underage consumption of alcohol includes Cops in Shops (CIS), Stop Underage Drinking and Sales (SUDS,) and server training for bartenders programs. These programs are a pro-active approach to reducing the sale of alcoholic beverages to persons under 21 and to reduce the over serving of alcohol to patrons. Of fatal crashes for drivers between the ages of 15 and 20, over 21 percent of them were alcohol related.

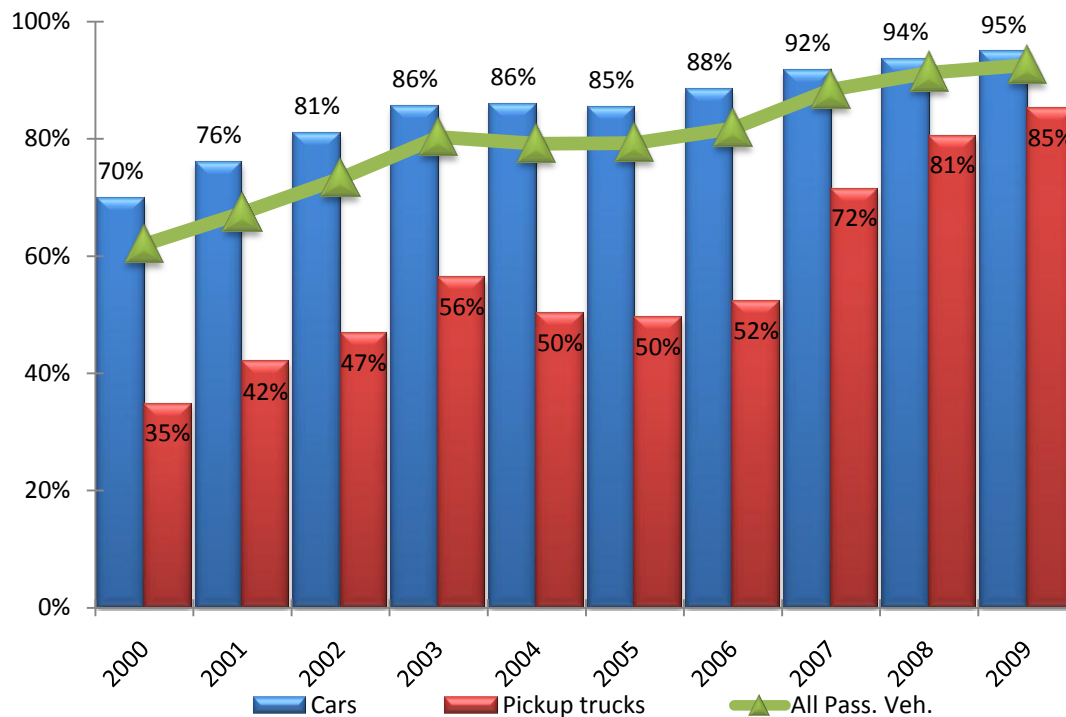
The Students Against Destructive Decisions (SADD) program focuses on reducing underage drinking and driving, as well as increasing seat belt usage rates among teens. SADD encourages schools throughout the state to implement a local SADD chapter in their schools allowing students to become traffic safety advocates so that they may teach their peers.

Additional potential strategies and countermeasures for alcohol-related crashes are detailed in NCHRP 500 Series Volume 16: A Guide for Reducing Alcohol-Related Collisions.

8.6.2 Occupant protection

Indiana's seat belt usage rate for all passenger vehicles has increased from a low of 62 percent in 2000 to a high of 92.9 percent in 2009. Also noteworthy is that the restraint usage rate for pickup trucks increased 35 percentage points since 2004. This dramatic increase was due in part to the passage of the primary seat belt bill in 2006. However, the individuals who are not buckled up are those who are being injured or killed most often in traffic collisions.

Figure 18 Seat Belt Usage Rates



2000-2009 DATA DERIVED FROM THE ANNUAL ROADSIDE OBSERVATIONAL STUDY (JULY 2009 RESULTS)

Lead Agency: ICJI

Implementation: HSP

Performance benchmark: Determined annually in the Indiana Highway Safety Plan (23 U.S.C. § 402)

Strategies and Countermeasures: An Occupant Protection Program Manager plans, coordinates and oversees occupant protection initiatives while promoting the education and enforcement of Indiana's occupant protection laws.

Indiana University's Automotive Safety Program (ASP) conducts statewide public information and education programs to increase proper use of occupant safety restraints for children. The ASP also provides education and training and oversees Project L.O.V.E (Law Officer Voucher and Enforcement), a child safety seat voucher program.

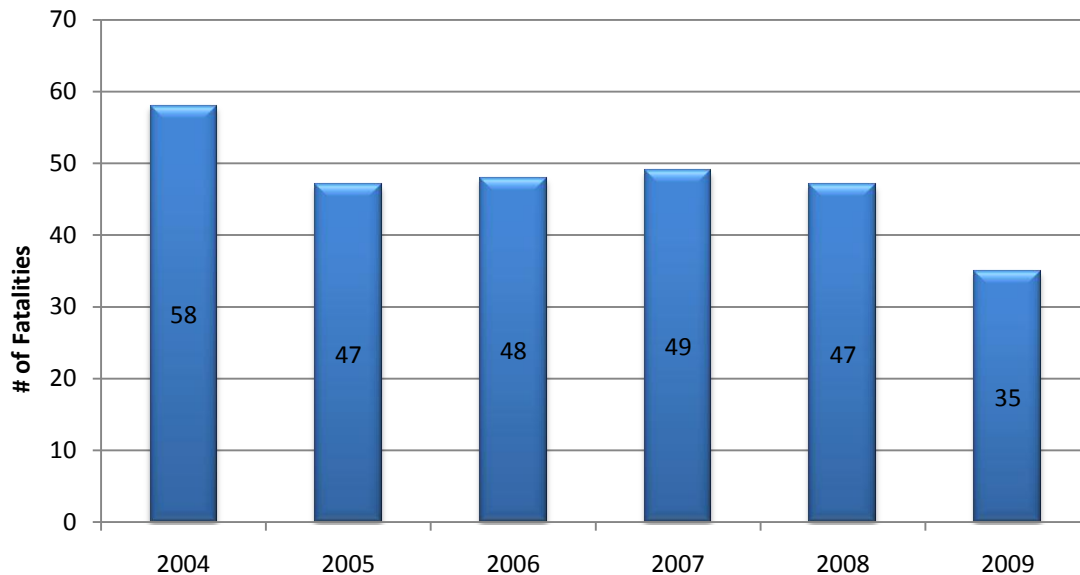
The Operation Pull Over (OPO) program provides grant funding to local and state law enforcement departments for conducting enhanced traffic enforcement. The overtime enforcement for the OPO program provides for saturation patrols, sobriety checkpoints as well as other proven seat belt, DUI and aggressive driving enforcement methods.

In 2005, Indiana participated as a pilot state for the Rural Demonstration Program (RDP), which NHTSA report DOT HS 810 753 shows, had a significant effect in increasing seat belt usage rates among rural residents. A majority of Indiana' unrestrained fatalities occur in the rural areas of the state. The 20 rural counties of the state with the highest number of unrestrained fatality and serious bodily injuries will be the focus of the RDP.

Additional potential strategies and countermeasures for occupant- protection improvement are detailed in NCHRP 500 Series Volume 11: A Guide for Increasing Seatbelt Use.

Indiana law requires that children under the age of eight or 57 inches tall be properly restrained in a child safety seat. Approximately five percent of all children involved in 2009 Indiana collisions experienced serious or life threatening injuries, 35 were fatal, and 235 were reported as incapacitating. Research findings suggest that older children (ages 8 to 15) are at greater risk of suffering serious injuries and fatalities than the other child age groups. This higher vulnerability is likely due in part to lower rates of restraint usage among child passengers in this age group.

Figure 19 Child Fatalities in Crashes



Data derived from 2009 Indiana Traffic Safety Fact Sheet – Children by the Center for Criminal Justice Research

Lead Agency: ICJI

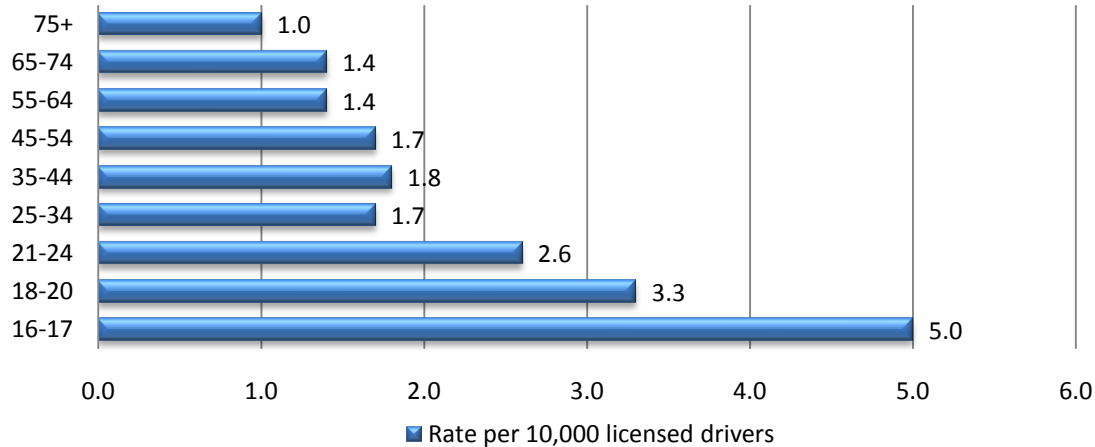
Implementation: HSP

Performance benchmark: Determined annually in the Indiana Highway Safety Plan (23 U.S.C. § 402)

8.6.3 Young drivers

Motor vehicle collisions are consistently the leading cause of death and one of the leading causes of non-fatal injury for young people ages 15 to 20. In 2009 in Indiana, this age group represented 9 percent of the population, 6 percent of licensed drivers, and 17 percent of drivers involved in collisions. The number and rate of young drivers killed in collisions decreased in 2009; however, young drivers—especially 16-17 year olds—are experiencing significantly higher rates of involvement in fatal collisions than older age groups. The actions of young drivers are more often reported as having contributed to their involvement in collisions than older drivers, and errant/risky driving and distracted driving are more common for young drivers involved in collisions.

Figure 20 Drivers Age in Fatal Crashes 2009



DATA DERIVED FROM 2009 INDIANA TRAFFIC SAFETY FACT SHEET – YOUNG DRIVERS BY THE CENTER FOR CRIMINAL JUSTICE RESEARCH

Lead Agency: ICJI

Implementation: HSP

Performance benchmark: *Determined annually in the Indiana Highway Safety Plan (23 U.S.C. § 402)*

Strategies and Countermeasures: In an effort to reduce young driver fatalities, Indiana has strengthened its Graduated Driver's License (GDL) laws. Changes to the previous law were to ensure that young drivers would gain more driving experience before they were granted full licensure. The new law pushed back the minimum age requirements for learners' permits and probationary licenses to be issued, increased the holding time for learners' permits, reduced driver distractions and restricted driving times. Some of these provisions took effect July 1, 2009 while others went into effect July 1, 2010.

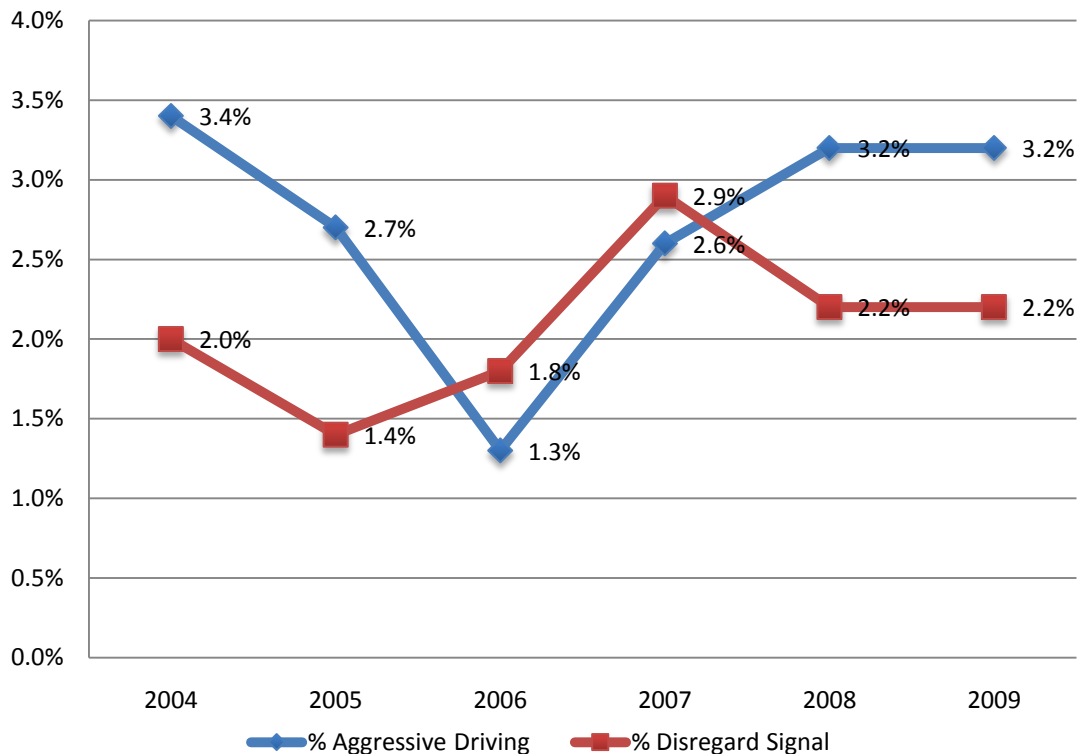
While young drivers are involved in collision at a higher rate than other age groups, this pattern is not always due to lack of experience, but rather attitudinal difference between young drivers and other age groups. These differences are seen in the disparities between different contributing factors in collisions involving a young driver. Of all factors assigned to a driver during a collision, young drivers are most likely to have errant or risky driving as a contributing factor than other age groups.

Potential strategies and countermeasures for crashes involving young drivers are detailed in NCHRP 500 Series Volume 19: A Guide for Reducing Collisions Involving Young Drivers.

8.6.4 Dangerous Driving

In 2009, dangerous driving actions were a contributing factor in 13 percent of all traffic collisions and 25 percent of fatal collisions in Indiana. Indiana defines Dangerous Driving to encompass aggressive driving, speeding and disregard of traffic control devices.

Figure 21 Aggressive Driving and Disregard Traffic Signal Fatal Collisions as Percent of Total Collisions



DATA DERIVED FROM 2009 INDIANA TRAFFIC SAFETY FACT SHEET – DANGEROUS DRIVING BY THE CENTER FOR CRIMINAL JUSTICE RESEARCH

Lead Agency: ICJI

Implementation: HSP

Performance benchmark: *Determined annually in the Indiana Highway Safety Plan (23 U.S.C. § 402)*

Strategies and Countermeasures: Strategies to counter dangerous driving include support of funding for overtime pay for law enforcement officers to be dedicated to enforcing the traffic laws of areas prone to dangerous driving habits such as speeding, failure to yield at highway-rail crossings, aggressive driving and disregard of traffic control devices. Roadways and intersections in Indiana where persistent dangerous driving habits have resulted in crashes and fatalities are targeted for enforcement. Sustained presence by law enforcement seeks to eliminate dangerous driving habits through saturation patrols.

Additional potential strategies and countermeasures for dangerous driving crashes are detailed in NCHRP 500 Series Volume 1: A Guide for Addressing Aggressive-Driving Collisions and Volume 12: A Guide for Reducing Collisions at Signalized Intersections.

9 SHSP IMPLEMENTATION AND EVALUATION

Under 23 U.S.C. § 148, INDOT is charged by federal law to develop this SHSP. The commissioner of INDOT, the Superintendent of ISP and the Executive Director of ICJI all serve as members of the Governor's Council on Impaired and Dangerous Driving, which provides traffic safety policy recommendations to the governor. As such, they serve as the SHSP Executive Policy Group.

Within INDOT, the Office of Traffic Safety is responsible for monitoring and facilitating the implementation, evaluation and required federal reporting on the SHSP. The Strategic Highway Safety Plan Manager serves as the central coordinator and facilitator for the SHSP.

Implementation action plans for SHSP emphasis areas are identified within the several annual highway safety action plans and programs:

- Highway Safety Improvement Program and High Risk Rural Road Program (Per 23 CFR 924)
- Highway-Rail Grade Crossing Safety Action Plan (Per 49 U.S.C. § 202)
- Highway Safety Plan (Per 23 U.S.C. § 402)
- Commercial Vehicle Safety Plan (Per 49 CFR 350)

The agencies required by federal law to produce the various reports will determine the necessary data needs, resources, timelines, performance measures and periods of evaluation.

Using ARIES crash data as a basis for performance measurement, the SHSP managing agencies will monitor the SHSP to ensure the accuracy of data, priority of proposed improvements and effectiveness of the projects and plan regardless of the funding source or agency responsible for the implementation. At least every two years, the Executive Policy Group will review recommended adjustments in the SHSP's measures and objectives to address changing traffic safety issues. The managing agencies will fully evaluate traffic safety progress, vet revisions with stakeholders and secure executive approval of a reauthorized SHSP every four years.

10 GLOSSARY

Codes and Regulations

23 U.S.C. § 130: Railway Highway Crossings
23 U.S.C. § 148: Highway Safety Improvement Program
23 U.S.C. § 402: Highway Safety Programs
23 U.S.C. § 406: Grants for Primary Safety Belt Use Laws
49 U.S.C. § 202: Highway-Rail Grade Crossing Safety Action Plans
23 CFR 924: Highway Safety Improvement Program
23 CFR 1200: Uniform Procedures for State Highway Safety Programs
49 CFR 350: Commercial Motor Carrier Safety Assistance Program

Acronyms

AASHTO: American Association of State Highway Transportation Officials
ACS-COT: American College of Surgeons - Committee on Trauma
ARIES: Automated Reporting Information Exchange System
CFR: Code of Federal Regulations
CODES: Crash Outcome Data Evaluation System
CVSP: Commercial Vehicle Safety Plan
INDOT: Indiana Department of Transportation
EMS: Emergency Medical Services
FHWA: Federal Highway Administration
FMCSA: Federal Motor Carrier Safety Administration
FRA: Federal Railroad Administration
HMVMT: Hundred Million Vehicle Miles Traveled
HSIP: Highway Safety Improvement Program
HSP: Highway Safety Plan (Section 402)
LETB: Indiana Law Enforcement Training Board
NCHRP: National Cooperative Highway Research Program
NHTSA: National Highway Traffic Safety Administration
SAFETEA-LU: Safe, Accountable, Flexible, Efficient Transportation Equity Act: A
Legacy for Users
SHSP: Strategic Highway Safety Plan
TRCC: Traffic Records Coordinating Committee
U.S.C.: United States Code

- Volume 1: A Guide for Addressing Aggressive-Driving Collisions
- Volume 2: A Guide for Addressing Collisions Involving Unlicensed Drivers and Drivers with Suspended or Revoked Licenses
- Volume 3: A Guide for Addressing Collisions with Trees in Hazardous Locations
- Volume 4: A Guide for Addressing Head-On Collisions
- Volume 5: A Guide for Addressing Unsignalized Intersection Collisions
- Volume 6: A Guide for Addressing Run-Off-Road Collisions
- Volume 7: A Guide for Reducing Collisions on Horizontal Curves
- Volume 8: A Guide for Reducing Collisions Involving Utility Poles
- Volume 9: A Guide for Reducing Collisions Involving Older Drivers
- Volume 10: A Guide for Reducing Collisions Involving Pedestrians
- Volume 11: A Guide for Increasing Seatbelt Use
- Volume 12: A Guide for Reducing Collisions at Signalized Intersections
- Volume 13: A Guide for Reducing Collisions Involving Heavy Trucks
- Volume 14: A Guide for Reducing Crashes Involving Drowsy and Distracted Drivers
- Volume 15: A Guide for Enhancing Rural Emergency Medical Services
- Volume 16: A Guide for Reducing Alcohol-Related Collisions
- Volume 17: A Guide for Reducing Work Zone Collisions
- Volume 18: A Guide for Reducing Collisions Involving Bicycles
- Volume 19: A Guide for Reducing Collisions Involving Young Drivers
- Volume 20: A Guide for Reducing Head-on Crashes on Freeways
- Volume 21: Safety Data and Analysis in Developing Emphasis Area Plans
- Volume 22: A Guide for Reducing Collisions Involving Motorcycles
- Volume 23: A Guide for Reducing Speeding-Related Crashes